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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* BRIAN HOLTZ, VIJAY BALASUBRAMANIAN, NIDHEESH  
DUBEY, ASEEM SHARMA, and VIVEK PANDEY

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Appeal 2008-004440  
Application 10/021,943  
Technology Center 2100

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Decided: August 24, 2009

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*Before* JAY P. LUCAS, ST. JOHN COURTENAY III, and  
JAMES R. HUGHES, *Administrative Patent Judges*.

HUGHES, *Administrative Patent Judge*.

DECISION ON APPEAL

## STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1, 2, 4-6, 9, 10, 12-14, 17, 18, and 20-22. Claims 3, 7, 8, 11, 15, 16, 19, 23, and 24 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

We reverse and enter a new ground of rejection.

### *Appellants' Invention*

Appellants invented a comparator and method for organizing files on a computer system. The comparator and method compare two file tree descriptions (file structures) and generate a sequenced log of changes that transforms an old file structure into a new file structure. (Spec. 1, ll. 12-14; 5, ll. 3-16.)<sup>1</sup>

### *Claim*

Independent claims 1 and 9 further illustrate the invention. They read as follows:

1. A method for comparing file tree descriptions comprising:
  - obtaining a first file structure;
  - obtaining a second file structure;
  - comparing said first file structure to said second file structure;

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<sup>1</sup> We refer to Appellants' Specification ("Spec."), Amended Brief on Appeal – Appeal Brief ("App. Br.") filed May 11, 2007, and Reply Brief ("Reply Br.") dated October 22, 2007. We also refer to the Examiner's Answer ("Ans.") mailed August 16, 2007.

generating a sequence log of changes that transform said first file structure to said second file structure; and

optimizing the sequence log of changes by detecting a creation operation and a deletion operation associated with the same file and replacing the creation operation and the deletion operation with a reparent operation.

9. A file tree comparator comprising:

a first file structure configured to be obtained;

a second file structure configured to be obtained; and

a comparator for

comparing said first file structure to said second file structure; and

generating a sequence log of changes that transform said first file structure to said second file structure; and

optimizing the sequence log of changes by detecting a creation operation and a deletion operation associated with the same file and replacing the creation operation and the deletion operation with a reparent operation.

### *References*

The Examiner relies on the following references as evidence of unpatentability:

Man-Hak Tso (“Tso”)	US 5,706,509	Jan. 6, 1998
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Multer	US 6,925,476 B1	Aug. 2, 2005
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*Rejections*

The Examiner rejects claims 1, 2, 4-6, 9, 10, 12-14, 17, 18, and 20-22 under 35 U.S.C. § 103(a) as unpatentable over Tso and Multer.

*Appellants' Contentions*

Appellants contend that the Examiner improperly rejected the claims. Specifically, Appellants contend that the Examiner failed to establish a proper prima facie case of obviousness for the claims (independent claims 1, 9, and 17, and dependent claims 2, 4-6, 10, 12-14, 18, and 20-22) because the Tso and Multer references do not teach or suggest optimizing the sequence log of changes by replacing the creation operation and the deletion operation with a reparent operation. (App. Br. 5-8.) Appellants also contend that the invention of claims 2, 10, and 18 is not obvious in view of Tso and Multer because the references do not teach or suggest recursively walking said first file structure. (App. Br. 9.)

*Examiner's Findings and Conclusions*

The Examiner found that that Tso teaches each feature of Appellants' invention (as claimed in independent claims 1, 9, and 17, and dependent claims 2, 4-6, 10, 12-14, 18, and 20-22), except that Tso does not explicitly teach optimizing the sequence log of changes by detecting a creation and a deletion operation. The Examiner found this feature is taught by Multer. (Ans. 4-5.) In particular, the Examiner found Tso teaches replacing the creation operation and the deletion operation with a reparent operation. (Ans. 4-5.)

## ISSUES

Based on Appellants' contentions, as well as the findings and conclusions of the Examiner, the issue before us is as follows.

Did Appellants demonstrate the Examiner erred in establishing a proper prima facie case of obviousness because the Tso and Multer references do not teach or suggest optimizing the sequence log of changes by replacing the creation operation and the deletion operation with a reparent operation?

## FINDINGS OF FACT (FF)

We find that the following enumerated findings are relevant to the rejections under review and are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

### *Appellants' Invention*

1. Appellants describe a comparator and method for organizing files on a computer system. The comparator and method compare two file structures (trees) and generate a sequenced log of changes that transforms an old file structure into a new file structure. (Spec. 1, ll. 12-14; 5, ll. 3-16). Appellants describe a "reparent" operation as replacing a "parent" node or file of a sub-branch of descending (dependent) nodes or files in a file structure (tree). (Spec. 2, ll. 9-12; 8, ll. 10-13; 9, ll. 6-20.)

*Tso Reference*

2. Tso describes a method and apparatus for synchronizing data among different applications. Specifically, Tso teaches a method of synchronizing a first set of data with a second set of data at a record level, rather than at a file level. (Abstract, col. 1, ll. 7-10; col. 2, ll. 51-67; col. 3, ll. 50-53.)

3. Tso does not describe optimizing file structures. Tso describes synchronizing and optimizing record level data. (Col. 4, ll. 58-61; col. 6, ll. 22-25; col. 7, ll. 51-57; col. 9, l. 1 to col. 13, l. 67.)

4. Tso does not describe a reparent operation, i.e., replacing a “parent” node or file of a branch (sub-branch) of nodes or files in a file structure (tree).

*Multer Reference*

5. Multer describes a method and apparatus for synchronizing application data between two systems independent of the form in which the data is kept. Specifically, Multer teaches a method for merging the contents of multiple change logs into an aggregate change log. (Abstract, col. 1, ll. 9-13; col. 2, ll. 57-65; col. 7, ll. 55-63.)

PRINCIPLES OF LAW

*Burden on Appeal*

Appellants have the burden on appeal to the Board to demonstrate error in the Examiner’s position. *See In re Kahn*, 441 F.3d 977, 985-86

(Fed. Cir. 2006) (“On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.”) (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

### *Obviousness*

The Examiner bears the initial burden of presenting a *prima facie* case of obviousness, and the Appellants have the burden of presenting a rebuttal to the *prima facie* case. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). A claimed invention is not patentable if the subject matter of the claimed invention would have been obvious to a person having ordinary skill in the art. 35 U.S.C. § 103(a); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 13 (1966).

### ANALYSIS

We first consider the issue of whether Appellants have demonstrated the Examiner erred in establishing a proper *prima facie* case of obviousness in that the Tso and Multer references do not teach optimizing the sequence log of changes by replacing the creation operation and the deletion operation with a reparent operation. We will reverse the Examiner’s rejection of claims 1, 2, 4-6, 9, 10, 12-14, 17, 18, and 20-22 for the reasons that follow.

Initially we note disagreement between the Examiner and the Appellants regarding the meaning of a “reparent” operation. Although Appellants do not explicitly define a “reparent” operation, Appellants do



briefly describe such an operation. We find that one of skill in the art would understand a “reparent” operation to mean replacing a “parent” node or file of a branch (sub-branch) of descending dependent nodes or files in a file tree structure with a new parent node or file. (FF 1.)

We agree with the Examiner that Tso describes obtaining a first and a second data set, comparing the data sets, generating a change list (sequence log of changes), and optimizing the change log. (Ans. 4.) We also agree with the Examiner that Multer describes optimizing a change log by detecting creation and deletion operations. (Ans. 4.) The Examiner correctly finds that Tso and Multer describe synchronizing and optimizing data – in particular a change log of data including creation and deletion operations. Nonetheless, we cannot agree with the Examiner that optimizing a change log by eliminating redundant creation and deletion operations is the same as reparenting a file tree branch – a feature recited in every independent claim. The Tso and Multer references must teach or suggest a “reparent” operation. We find, however, that the references do not teach such an operation. The references do not mention replacing parent files in a file structure. In fact, both references describe synchronizing data, not file structures. (FF 2-5.) Tso in particular explains that it synchronizes data at a record level, rather than at a file level. (FF 2, 3.)

For the foregoing reasons, Appellants have persuaded us of error in the Examiner’s obviousness rejection of claims 1, 2, 4-6, 9, 10, 12-14, 17, 18, and 20-22. Accordingly, we will not sustain the Examiner’s rejection of these claims.

### CONCLUSION OF LAW

On the record before us, we find that Appellants demonstrate the Examiner erred in establishing a proper *prima facie* case of obviousness because the Tso and Multer references do not teach or suggest optimizing the sequence log of changes by replacing the creation operation and the deletion operation with a reparent operation.

### NEW GROUND OF REJECTION

Pursuant to our authority under 37 C.F.R. § 41.50(b) (2008), we are entering the following new ground of rejection.

We reject claims 1, 2, 4-6, 9, 10, 12-14, 17, 18, and 20-22 under 35 U.S.C. § 101 because they recite subject matter that is not patent-eligible.

We group the claims as follows: (1) “method” claims 1, 2, and 4-6; (2) “comparator” (machine) claims 9, 10, and 12-14; and (3) “computer-readable medium” (machine or manufacture) claims 17, 18, and 20-22.

### ADDITIONAL FINDINGS OF FACT (FF)

We find that the following enumerated findings are relevant to the rejections under review and are supported by at least a preponderance of the evidence.

6. The preamble of claim 1 recites a “method for comparing file tree descriptions.” Claim 1 also recites the steps of obtaining file structures, comparing file structures, generating a sequence log of changes, and optimizing the sequence log. (App. Br. 11 (claim 1).)

7. The preamble of claim 9 recites “[a] file tree comparator.” Claim 9 also recites the elements comprising the comparator, including “a first file structure,” “a second file structure,” and “a comparator.” Claim 9 further recites several functional features of the comparator, including comparing the file structures, generating a sequence log of changes, and optimizing the sequence log. (App. Br. 12 (claim 9).)

8. The preamble of claim 17 recites “[a] computer-readable medium storing computer-executable instructions for performing a method of comparing file tree descriptions.” Claim 17 also recites the method steps of obtaining file structures, comparing file structures, generating a sequence log of changes, and optimizing the sequence log. (App. Br. 13 (claim 17).)

9. Appellants Specification explains that “[i]n this manner, computer 800 may obtain application code in the form of a carrier wave.” (Spec. 13, ll. 1-2.) Appellants’ further explain that the computer-readable medium may include carrier waves, e.g., signals:

Application code may be embodied in any form of computer program product. A computer program product comprises a medium configured to store or transport computer readable code, or in which computer readable code may be embedded. Some examples of computer program products are CD-ROM disks, ROM cards, floppy disks, magnetic tapes, computer hard drives, servers on a network, and carrier waves. (Spec. 13, ll. 8-12.)

#### ADDITIONAL PRINCIPLES OF LAW

Under 35 U.S.C. § 101, four categories of subject matter are eligible for patent protection: (1) processes; (2) machines; (3) manufactures; and (4) compositions of matter. 35 U.S.C. § 101.

The “machine-or-transformation test” governs patent-eligible subject matter for process claims under § 101. As explained in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc):

The machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article. *See [Gottschalk v.] Benson*, 409 U.S. [63,] 70, 93 S. Ct. 253 [(1972)]. Certain considerations are applicable to analysis under either branch. First, as illustrated by *Benson* and discussed below, the use of a specific machine or transformation of an article must impose meaningful limits on the claim’s scope to impart patent-eligibility. *See Benson*, 409 U.S. at 71-72, 93 S. Ct. 253. Second, the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity. *See [Parker v.] Flook*, 437 U.S. [584,] 590, 98 S. Ct. 2522 [(1978)].

*Bilski*, 545 F.3d at 961-62.

In its *Bilski* opinion, the U.S. Court of Appeals for the Federal Circuit further explains “insignificant extra-solution activity:”

Although the [Supreme] Court spoke of “postsolution” activity, we have recognized that the Court’s reasoning is equally applicable to any insignificant extra-solution activity regardless of where and when it appears in the claimed process. *See In re Schrader*, 22 F.3d 290, 294 (Fed. Cir. 1994) (holding a simple recordation step in the middle of the claimed process incapable of imparting patent-eligibility under § 101); *In re Grams*, 888 F.2d 835, 839-40 (Fed. Cir. 1989) (holding a pre-solution step of gathering data incapable of imparting patent-eligibility under § 101).

*Id.* at 957 n.14.

Also, as noted in *Bilski*, the *Diehr* Court held that “mere field-of-use limitations are generally insufficient to render an otherwise ineligible

process claim patent-eligible. *See* [*Diamond v. Diehr*,] 450 U.S. [175,] 191-92, 101 S. Ct. 1048 [(1981)] (noting that ineligibility under § 101 ‘cannot be circumvented by attempting to limit the use of the formula to a particular technological environment’).” *Bilski*, 545 F.3d at 957.

## ANALYSIS

### *Claims 1, 2, and 4-6*

Claim 1 is an independent claim. Claims 2 and 4-6 are dependent claims that include the limitations of claim 1. We chose claim 1 as the representative claim. Claim 1 recites a “method for comparing file tree descriptions” (FF 6) and is not directed to a machine, manufacture, or composition of matter as set forth in 35 U.S.C. § 101. Our analysis for claim 1 will therefore focus on whether the claim recites a patent-eligible process under § 101. Accordingly, we apply each prong of *Bilski*’s machine-or-transformation test to claim 1.

### *Machine Prong*

Claim 1 is not limited to any machine – let alone a particular machine. “[A] machine is a concrete thing, consisting of parts, or of certain devices and combination of devices. This includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result.” *In re Ferguson*, 558 F.3d 1359, 1364 (Fed. Cir. 2009) (quoting *In re Nuijten*, 500 F.3d 1346, 1355 (Fed. Cir. 2007) (internal quotation marks omitted), *reh’g denied en banc*, 515 F.3d 1361 (Fed. Cir. 2008), and *cert. denied*, 129 S. Ct. 70 (2008)). Claim 1

obtains data (a file structure), compares data (file structures), generates a change log, and optimizes the change log (FF 6) without tying these steps to any concrete parts, devices, or combinations of devices. In fact, one can perform each of these steps in one's mind. Such mental steps are patentably excluded under § 101. *See Benson*, 409 U.S. at 67; *see also In re Comiskey*, 554 F.3d 967, 979 (Fed. Cir. 2009) (“[M]ental processes – or processes of human thinking – standing alone are not patentable even if they have practical application.”) Thus, we do not find claim 1 recites any machine, let alone a particular machine, under this prong of the machine-or-transformation test.

*Transformation Prong*

Claim 1 obtains and compares data (file structures). (FF 6.) These data values (file structures) are neither physical objects nor do the data values represent physical objects. The data is nothing more than an abstract idea. The sequence log of changes (change log) generated from the data (FF 6) is similarly an abstract idea and may be generated using mental processes alone, or using a mathematical algorithm. Thus, the change log also is not a physical object, nor does it represent physical objects. The steps of generating and optimizing the change log (FF 6) do not transform an underlying article (physical object) into a different state or thing. We therefore find claim 1 does not recite an article to transform, or a transformative process.

For all the foregoing reasons, claims 1, 2, and 4-6 are not patent-eligible “processes” under § 101.

*Claims 9, 10, and 12-14*

Claim 9 is an independent claim. Claims 10 and 12-14 are dependent claims that include the limitations of claim 9. We chose claim 9 as the representative claim.

While the scope of patentable subject matter encompassed by § 101 is “extremely broad” and intended to “include anything under the sun that is made by man,” it is by no means unlimited. *Comiskey*, 554 F.3d at 977 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)) (internal quotation marks omitted). Thus, while Appellants’ claims 9, 10, and 12-14 appear to be directed to a “comparator” (FF 7) (a “machine” as categorized in § 101), this does not end the patent-eligibility analysis. *See Ferguson*, 558 F.3d at 1363.

Appellants’ “comparator” claims appear, at first glance, to be apparatus (machine) claims; however, the term “comparator” does not actually require or imply the presence of any apparatus. Similarly, although the body of these claims recite a comparator, this recitation fails to serve as a structural limitation because (1) it is not a “means” recitations subject to interpretation under 35 U.S.C. § 112, sixth paragraph, and (2) it would not have been understood in the art as implying any particular structure. Claim 9 merely recites a “comparator” without further structure and fails to recite specific tangible structure to perform the recited functions (discussed below).

Appellants admit that the invention can be realized in software. (Spec. 9, ll. 24-26.) The claims do not recite the comparator in terms of

hardware or tangible structural elements; instead, the claims merely recite functional limitations. As explained with respect to claim 1, the comparator obtains data (a file structure), compares data (file structures), generates a change log, and optimizes the change log (FF 7) without tying these functional limitations to any concrete parts, devices, or combinations of devices. As with claim 1, these functional limitations could be performed solely within one's mind, and are therefore unpatentable. *See Benson*, 409 U.S. at 67; *Comiskey*, 554 F.3d at 979.

In addition, nominal recitations of structure or “field of use” restrictions do not convert an otherwise patent ineligible method claim into an eligible one (or into a machine claim). *Bilski*, 545 F.3d at 957. *See also Diehr*, 450 U.S. at 191-92; *Benson*, 409 U.S. at 68-69; *Schrader*, 22 F.3d at 294; *Grams*, 888 F.2d at 839-40. We also note that analysis of a “machine” or “manufacture” claim and a “process” claim is the same under § 101. *See AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1357 (Fed. Cir. 1999) (abrogated by *Bilski*, 545 F.3d 943) (“Whether stated implicitly or explicitly, we consider the scope of § 101 to be the same regardless of the form--machine or process--in which a particular claim is drafted.”); *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) (abrogated by *Bilski*). Thus, as with claim 1, we do not find Appellants’ independent claim 9 and dependent claims 10 and 12-14 transform physical subject matter, nor do they recite a machine. The functional limitations of these claims are in fact a reconfiguration of the unpatentable method steps recited in claim 1, and they are not patentable for the same reasons.



For all the foregoing reasons, claims 9, 10, and 12-14 are not patent-eligible subject matter under § 101.

*Claims 17, 18, and 20-22*

Claims 17, 18, and 20-22 recite a “computer-readable medium.” (FF 8.) Appellants define such a medium as including a carrier wave or signal. (FF 9.) Our reviewing court has found that transitory, propagating signals such as carrier waves are not within any of the four enumerated statutory categories (process, machine, manufacture or compositions of matter) of patent eligible subject matter. *Nuijten*, 500 F.3d at 1357. Thus, a claim directed to computer-executable instructions (FF 8) embodied in a signal is not statutory under 35 U.S.C. § 101. For all the foregoing reasons, claims 17, 18, and 20-22 are not patent-eligible subject matter under § 101.

DECISION

We reverse the Examiner’s rejections of claims 1, 2, 4-6, 9, 10, 12-14, 17, 18, and 20-22 under 35 U.S.C. § 103(a). We also enter a new ground of rejection for claims 1, 2, 4-6, 9, 10, 12-14, 17, 18, and 20-22 for being non-statutory under 35 U.S.C. § 101.

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b). This section provides that “[a] new ground of rejection . . . shall not be considered final for judicial review.”

Section 41.50(b) also provides that the Appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of

the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record . . . .

37 C.F.R. § 41.50(b).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

REVERSED  
37 C.F.R. § 41.50(b)

msc

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